

REMARKS

This Amendment is responsive to the Office Action dated March 20, 2008. Applicant has amended claims 1, 4, 13, 16, 31, 34, and 39. Applicant has also added new claims 43-54. Claims 1-21 and 31-54 are pending upon entry of this Amendment.

Allowable Subject Matter

In the Office Action, the Examiner objected to claims 4-12, 16-21 and 37 as including subject matter that would be allowable if rewritten to overcome the rejections under 35 U.S.C. § 101 and to include all of the limitations of the base claim and any intervening claims. Applicant appreciates this indication of allowability with respect to claims 4-12, 16-21 and 37. However, Applicant has not amended the claims to place claims 4-12, 16-21 and 37 in independent form at this time, as Applicant believes that the independent claims as amended are allowable.

Claim Rejection Under 35 U.S.C. § 101

The Office Action rejected claims 1-12 and 34-42 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. In particular, the Office Action indicated that the claims “recite the mere manipulation of data or an abstract idea, or merely solves a mathematical problem without a limitation to a practical application,” i.e., without producing a useful, concrete and tangible result. Applicant disagrees with the rejection.

Applicant’s claim 1 provides a useful, concrete and tangible result, i.e., producing deblock filtered blocks containing data representing image pixels. As clearly described in Applicant’s specification, deblock filtering significantly mitigates visual artifacts (e.g., blockiness, blur, ringing, motion smear, etc.) in the image represented by the blocks to improve the quality of the image.¹ As such, the practical application of claims 1-12 and 34-42, as amended, is the generation of pixel data that represents an image with an increased visual quality. Because Applicant’s claims 1-12 and 34-42 provide a practical application, Applicant respectfully requests the rejection under 35 U.S.C. § 101.

The Office Action also rejected claims 13-21 under 35 U.S.C. § 101 because “[t]he means-plus-function language is supported by software/program enablement which is

¹ Applicant’s specification, paragraph [0053].

non-statutory as shown in para. 0054 of the specification” Claims 13-21 are means-plus-function claims as defined in 35 U.S.C. §112, sixth paragraph. Where means plus function language is used to define the characteristics of a machine invention, such language must be interpreted to read on only the structures disclosed in the specification and “equivalents thereof” that correspond to the recited function.²

Applicant’s specification clearly describes a number of structures used to perform the functions of claims 13-21. For example, Applicant’s drawing show a processor 250 (FIG. 2) and flow diagrams representing a number of processes that may be run on processor 250. The processes that may be run on processor 250 include a process of determining whether the neighboring blocks are subdivided (see, e.g., FIG. 3). Processor 250 also controls deblocking filter module 240, which performs deblock filtering when at least one of the neighboring blocks is determined to not be subdivided. Therefore, the processor 250 and deblocking filter module are both structural elements that perform functions set forth in claims 13-21. Thus, the apparatus of claims 13-21 is not simply software as suggested by the Office Action, but rather directed to a tangible embodiment of an apparatus having certain structural features. The fact that an apparatus may execute software does not, in any way, disqualify such an apparatus as statutory subject matter. Applicant respectfully requests withdrawal of the rejection of claims 13-21 under 35 U.S.C. § 101.

Claim Rejection Under 35 U.S.C. § 102

Claims 1, 13, 15, 31-32, 34 and 38-39

The Office Action rejected claims 1, 13, 15, 31-32, 34 and 38-39 under 35 U.S.C. § 102(b) as being anticipated by Kim (US 6,240,135). Applicant respectfully traverses the rejection to the extent such rejection may be considered applicable to the amended claims. Kim fails to disclose each and every feature of the claimed invention, as required by 35 U.S.C. § 102(b), and provides no teaching that would have suggested the desirability of modification to include such features.

Applicant’s claim 1, as amended, is directed to a method of processing images compressed using block based compression. Claim 1 recites determining whether two blocks are

² See MPEP 2106 and *In re Alappat*, 33 F.3d 1526, 1540, 31 USPQ2d 1545, 1554 (Fed. Cir. 1994) (*en banc*).

neighboring blocks. Claim 1 also recites determining whether the two neighboring blocks are both subdivided, if it is determined that the two blocks are neighboring blocks. Claim 1 further recites performing deblocking filtering on one or more edge pixels of the two neighboring blocks, after determining that at least one of the two neighboring blocks is not subdivided and outputting the filtered blocks to a display.

In support of the rejection of claim 1, the Office Action relied on Kim. The Office Action characterized Kim as disclosing determining whether the two neighboring blocks are both subdivided if it is determined that the two blocks are neighboring blocks. In particular, the Office Action stated that in order to continue the deblocking algorithm described in FIG. 4, the blocks (e.g., 8x8 block of FIG. 2 or 1x1 block of FIG. 2) must have been determined to not be subdivided. The Office Action further characterized Kim as disclosing perform deblocking filtering on one or more edge pixels of the two neighboring blocks after determining that both of the two neighboring blocks are not subdivided. Applicant disagrees with the Examiner's characterization of the Kim reference with respect to Applicant's claim 1.

Kim describes a technique for removing blocking artifacts using different deblocking modes based on the degree of blocking artifacts in the block.³ A DC offset deblocking mode is selected and applied when there are blocking artifacts in a smooth region of the image. A default deblocking mode is selected and applied when there are blocking artifacts in a sharp transition region of the image.⁴ In particular, a mode decision value is determined using the following formula

$$\text{Mode decision value(eq_cnt)} = \phi(v_0 - v_1) + \phi(v_1 - v_2) + \phi(v_2 - v_3) + \phi(v_3 - v_4) + \phi(v_4 - v_5) + \phi(v_5 - v_1) + \phi(v_7 - v_8) + \phi(v_8 - v_9),$$

where $\phi(\gamma) = 1$ if $|\gamma| \leq \text{THR1}$ (first threshold value) and $\phi(\gamma) = 0$ otherwise.⁵ The mode decision value eq_cnt is then compared to a second threshold (THR2) to make the deblocking mode determination. If eq_cnt is greater than or equal to THR2 the DC offset deblocking mode is applied. If eq_cnt is less than THR2 the default deblocking mode is applied.⁶

³ Kim, column 3, lines 19-25.

⁴ Kim, column 5, lines 32-37.

⁵ Kim, at column 5, line 61 – column 6, line 2.

⁶ Kim, column 6, lines 3-5.

Kim does not, however, disclose determining whether the two neighboring blocks are both subdivided and performing deblock filtering on one or more edge pixels of the two neighboring blocks, after determining that at least one of the two neighboring blocks is not subdivided, as required by Applicant's claim 1. In support of the rejection of claim 1, the Office Action merely made a conclusory statement that Kim must have determined that the blocks are not subdivided in order to continue with the deblocking algorithm of FIG. 4. The Office Action, however, provides no evidence that Kim discloses making a determination as to whether the neighboring blocks are subdivided. In fact, such a determination is unnecessary in the Kim reference since the techniques of the Kim reference are applied to fixed size block patterns.⁷

Additionally, Kim does not require that such a determination be made to perform the deblock filtering described in Kim. Instead, the deblock filtering technique described in Kim makes a deblocking decision based on the degree of blocking in the block and not whether the neighboring blocks are subdivided, as required by Applicant's claim 1. Additionally, the Kim reference always performs deblock filtering, although the type of deblock filtering performed depends on the degree of blocking artifacts in the block. As such, Kim does not determine whether or not to perform deblock filtering based on whether at least one of the neighboring blocks are subdivided. Applicant's claim 1, however, requires performing deblock filtering only when at least one of the neighboring blocks is not subdivided.

Claims 2, 14, 33, 35 and 40

The Office Action rejected claims 2, 14, 33, 35 and 40 under 35 U.S.C. § 102(b) as being anticipated by Kim in view of Thyagarajan et al. (US 6,529,634). A claim is anticipated under 35 U.S.C. § 102(b) only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. If a prior art reference fails to disclose any element of a claim, then the rejection under 35 U.S.C. 102(b) is improper.⁸ In support of the rejection of claims 2, 14, 33, 35 and 40, the Office Action combined the teachings

⁷ Kim, at column 4, lines 3-7.

⁸ *Id.* See also *Lewmar Marine, Inc. v. Barient, Inc.* 827 F.2d 744, 3 USPQ2d 1766 (CAFC 1987); *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (CAFC 1990); *C.R. Bard, Inc. v. MP Systems, Inc.*, 157 F.3d 1340, 48 USPQ2d 1225 (CAFC 1998); *Oney v. Ratliff*, 182 F.3d 893, 51 USPQ2d 1697 (CAFC 1999); *Apple Computer, Inc. v. Articulate Systems, Inc.*, 234 F.3d 14, 57 USPQ2d 1057 (CAFC 2000).

of two references to arrive at the claimed invention. As such, the rejection of claims 2, 14, 33, 35 and 40 as being anticipated under 35 U.S.C. § 102(b) is improper and should be withdrawn.

Even assuming the Office Action meant to reject claims 2, 14, 33, 35 and 40 under 35 U.S.C. § 103, the combined references fail to teach or suggest the requirements of claims 2, 14, 33, 35 and 40. For at least the reasons set forth above with respect to claim 1, Kim fails to teach or suggest the requirements of the independent claims from which claims 2, 14, 33, 35 and 40 depend. Thyagarajan, which does not describe deblock filtering at all, fails to cure the deficiencies described above with respect to Kim. For at least these reasons, Applicant's respectfully request withdrawal of the rejection of claims 2, 14, 33, 35 and 40.

Claim Rejection Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 41-42 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Tan et al. (US 6,188,799). In the Office Action, the Examiner rejected claim 36 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Tan et al. (US 6,188,799) and Varma et al. (US 2003/0235250). Applicant respectfully traverses the rejection to the extent such rejections may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention.

In particular, Kim fails to disclose or suggest the requirements of Applicant's claim 34 as amended for the reasons set forth above with respect to claim 34. Therefore, claims 36 and 41-42, which depend directly or indirectly on independent claim 34, are also allowable for the reasons described above with respect to claim 1. Tan and Varma fail to cure the deficiencies of Kim with respect to claim 34. Applicant therefore reserves further comment regarding the characterization and application of Tan and Varma to Applicant's claims 36 and 41-42, and in no way acquiesces to the Examiner's characterization of the claims or the references as applied to the claims.

For at least these reasons, the Examiner has failed to establish a prima facie case for non-patentability of Applicant's claims 36 and 41-42 under 35 U.S.C. § 103(a). Withdrawal of this rejection is requested.

New Claims:

Applicant has added claims 43-54 to the pending application. The applied references fail to disclose or suggest the inventions defined by Applicant's new claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed inventions. No new matter has been added by the new claims.

CONCLUSION

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 17-0026. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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